

CLAIMS

1. A copolymer composition comprising a compound having the formula:



wherein A is a thermoplastic block copolymer including a monomer $\begin{array}{c} (C)_n- \\ | \\ RZ \end{array}$; B is an elastomeric block copolymer including a monomer $-(D)_m$; m and n are each

- 5 independent integers between 10 and 10^7 ; R is an anion; and Z is a cation; and RZ is present on over 0.7n of the monomer C in copolymer A.

2. The copolymer composition of claim 1 wherein A is polystyrene.
3. The copolymer composition of claim 1 wherein B is polyisobutylene.
4. The copolymer composition of claim 1 wherein R is an anion comprising oxygen and an element selected from the group consisting of a chalcogen and a pnictogen.
5. The copolymer composition of claim 4 wherein R is SO_3 .

6. The copolymer composition of claim 1 wherein Z is a cation compatible with R and selected from the group consisting of H, a lanthanide species, an alkaline earth metal and an alkali metal.
7. The copolymer composition of claim 6 wherein Z is Cs.
8. The copolymer composition of claim 1 further comprising a second block A bonded to block B.
9. The copolymer composition of claim 1 wherein block A is present at levels ranging between 1-99% of the total block copolymer.
10. The copolymer composition of claim 1 wherein block A is present at levels ranging between 5-90% of the total block copolymer.
11. The copolymer composition of claim 1 wherein block A is present at levels ranging between 10-70% of the total block copolymer.
12. A copolymer composition comprising a compound having the formula:



wherein A is a thermoplastic block copolymer $\begin{array}{c} (C)_n- \\ | \\ PRZ \end{array}$; B is an elastomeric block copolymer including a monomer $-(D)_m$; A' is a thermoplastic block copolymer

5 $\begin{array}{c} (C)_q- \\ | \\ PRZ \end{array}$; m and n are each independent integers between 10 and 10^7 ; R is an anion; and Z is a cation; P is a phenyl group, and RZ is present on over $0.7n+q$ of P.

13. The copolymer composition of claim 12 wherein R is an anion comprising oxygen and an element selected from the group consisting of a chalcogen and a pnictogen.

14. The copolymer composition of claim 12 wherein Z is a cation compatible with R and selected from the group consisting of H, a lanthanide species, an alkaline earth metal and an alkali metal.

15. The copolymer composition of claim 12 wherein R is SO_3 .

16. The copolymer composition of claim 12 wherein Z is selected from the group consisting of: H, Cs, Zn and Na.

17. The copolymer composition of claim 12 wherein RZ is SO₃H.
18. The copolymer composition of claim 12 wherein block A is present at levels ranging between 1-99% of the total block copolymer.
19. The copolymer composition of claim 12 wherein block A is present at levels ranging between 5-90% of the total block copolymer.
20. The copolymer composition of claim 12 wherein block A is present at levels ranging between 10-70% of the total block copolymer.
21. A semipermeable membrane comprising a copolymer composition according to claim 1.
22. The semipermeable membrane of claim 21 wherein the membrane has a thickness ranging between 5 microns and 5 millimeters.
23. A fuel cell comprising a semipermeable membrane according to claim 1.

24. An article of apparel comprising a composition according to claim 1.

25. The article of apparel according to claim 24 wherein the article is selected from the group consisting of: gloves, screens, drapes, masks, and breathable dressings, shirts, trousers, gowns, overboots, socks, hoods, caps, helmets, and eye goggles.

5 26. A semipermeable membrane comprising a copolymer composition according to claim 12.

27. The semipermeable membrane of claim 26 wherein the membrane has a thickness ranging between 5 microns and 5 millimeters.

28. A fuel cell comprising a semipermeable membrane according to claim 12.

29. An article of apparel comprising a composition according to claim 12.

30. The article of apparel according to claim 29 wherein the article is selected from the group consisting of: gloves, screens, drapes, masks, and breathable dressings, shirts, trousers, gowns, overboots, socks, hoods, caps, helmets, and eye goggles.